

IN THE CLAIMS

Each claim of the present application is set forth below with a parenthetical notation immediately following the claim number indicating the current claim status. The Examiner's entry of the claim amendments, as shown in marked-up form below, under Section 1.121 is respectfully requested.

1. (CURRENTLY AMENDED) An antenna adapted for connection to a signal feed, comprising:

in stacked relation;

a ground plane;

a dielectric layer;

a plurality of conductive regions;

an intermediate layer comprising a conductor segment and disposed between the ground plane and the plurality of conductive regions;

~~a conductive ground via connected between at least first ones~~ of the plurality of conductive regions each having a conductive via connected to ~~and~~ the ground plane;

~~a conductive signal via connected to second ones~~ of the plurality of conductive regions each having a conductive via connected to the signal feed; and

wherein the ground and the signal vias are electrically connected to the conductor segment.

2. (ORIGINAL) The antenna of claim 1 wherein each one of the plurality of conductive regions comprises a closed plane figure having a boundary selected from among straight lines and curves.

3. (ORIGINAL) The antenna of claim 1 wherein each one of the plurality of conductive regions comprises a sector of a circle.

4. (ORIGINAL) The antenna of claim 3 wherein the sector comprises a first straight line having a first and a second endpoint and a second straight line having a third and a fourth endpoint, and wherein the first and the second straight lines are joined at the first and the third endpoints to form an apex, and wherein an arc extends between the second and the fourth endpoints.

5. (ORIGINAL) The antenna of claim 1 wherein the plurality of conductive regions are disposed in a plane having a point defined therein, and wherein the plurality of conductive

regions comprises a first, a second, a third and a fourth sector, and wherein the apex of each of the first, the second, the third and the fourth sectors is positioned an equal distance from the point, and wherein the arcs of each of the first, the second, the third and the fourth sectors circumscribe a circle in the plane.

6. (ORIGINAL) The antenna of claim 5 further comprising a first and a second conductive ground via and a first and a second conductive signal via, wherein the first and the second ground vias and the first and the second signal vias are equally spaced about the point defined in the plane and located within one of the first, the second, the third, and the fourth sectors.

7. (ORIGINAL) The antenna of claim 6 wherein the first and the second sectors are opposingly disposed about the point, and wherein the third and the fourth sectors are opposingly disposed about the point, and wherein the first and the second signal vias are disposed within the first and the second sectors respectively, and wherein the first and the second ground vias are disposed within the third and the fourth sectors.

8. (ORIGINAL) The antenna of claim 1 further comprising three conductive ground vias, wherein the plurality of conductive regions comprises four conductive regions, and wherein each one of the three conductive ground vias is connected to one of the four conductive regions, and wherein the conductive signal via is connected to a fourth one of the four conductive regions.

9. (ORIGINAL) The antenna of claim 1 wherein the conductor segment provides inductive coupling between the ground via and the signal via.

10. (ORIGINAL) The antenna of claim 1 wherein the plurality of conductive regions provide capacitive coupling to the ground plane.

11. (ORIGINAL) The antenna of claim 1 further comprising a ground terminal in electrical communication with the conductive ground via on a bottom surface of the antenna, wherein the antenna is adaptable for mounting on a substrate having a ground region, and wherein the ground terminal is adapted for connection to the ground region.

12. (ORIGINAL) The antenna of claim 1 further comprising a signal feed terminal in electrical communication with the conductive signal via on a bottom surface of the antenna, wherein the antenna is adaptable for mounting on a substrate having a signal feed conductor, and wherein the signal feed terminal is adapted for connection to the signal feed conductor.

13. (ORIGINAL) The antenna of claim 1 wherein a size of the dielectric layer is substantially similar to a size of the ground plane.

14. (ORIGINAL) The antenna of claim 1 wherein a size of the dielectric layer is smaller than a size of the ground plane.

15. (ORIGINAL) The antenna of claim 1 wherein the dielectric layer comprises a substantially circular dielectric layer, and wherein the conductor segment is disposed in the substantially circular dielectric layer.

16. (ORIGINAL) The antenna of claim 15 wherein the dielectric layer further comprises a first and a second wing portion each extending radially from the substantially circular dielectric layer.

17. (CURRENTLY AMENDED) An antenna adapted for connection to a ground plane and to a signal feed, the antenna comprising:

in stacked relation;

_____ a first dielectric layer;

_____ ~~an~~ a conductive layer comprising a conductor segment;

_____ a second dielectric layer;

_____ a plurality of conductive regions;

a conductive ground via connected between at least one of the plurality of conductive regions and extending downwardly to a bottom surface of the first dielectric layer for connection to the ground plane;

a conductive signal via connected to one of the plurality of conductive regions and extending downwardly to a bottom surface of the first dielectric layer for connection to the signal feed; and

wherein the ground and the signal vias are electrically connected to the conductor segment.

18. (CURRENTLY AMENDED) An antenna comprising:

in stacked relation;

_____ a ground plane;

_____ a first dielectric layer;

_____ an intermediate conductive layer comprising a conductor segment;

_____ a second dielectric layer;

_____ a plurality of conductive regions;
a conductive ground via connected between at least one of the plurality of conductive regions and the ground plane;
a conductive signal via connected to one of the plurality of conductive regions; and
wherein the ground and the signal vias are electrically connected to the conductor segment.

19. (ORIGINAL) The antenna of claim 18 wherein the conductor segment inductively couples the ground and the signal vias.

20. (ORIGINAL) The antenna of claim 18 wherein the plurality of conductive regions provide capacitive loading for the antenna.

21. (ORIGINAL) The antenna of claim 18 wherein each one of the plurality of conductive regions comprises a conductive region having a circular sector shape.

22. (ORIGINAL) The antenna of claim 18 wherein the conductor segment comprises a conductive ring.

23. (CURRENTLY AMENDED) An antenna comprising:
in stacked relation;
_____ a ground plane;
_____ a first dielectric layer;
_____ an intermediate conductive layer comprising a conductor segment;
_____ a second dielectric layer;
_____ a first, a second, a third and a fourth sector-shaped conductive region;
a first and a second conductive ground via connected between the first and the third conductive regions and the ground plane, respectively;
a first and a second conductive signal via connected to the second and the fourth conductive regions; and
wherein the ground and the signal vias are electrically connected to the conductor segment.

24. (ORIGINAL) The antenna of claim 23 wherein the first, the second, the third and the fourth sector-shaped conductive regions each comprise an apex region, and wherein the first and the second ground vias and the first and the second signal vias are disposed in the apex region.

25. (ORIGINAL) The antenna of claim 23 wherein the ground plane comprises a conductive sheet, wherein the first and the second signal vias extend to the ground plane and are isolated from the conductive sheet.

26. (ORIGINAL) The antenna of claim 25 wherein the antenna is adapted for mounting on a substrate comprising a signal feed and a ground region, and wherein the first and the second ground vias are adapted for connection to the ground region, and wherein the first and the second signal vias are adapted for connection to the signal feed.

27. (ORIGINAL) An antenna adapted for mounting onto a substrate having a ground region and a signal feed, the antenna comprising;

a dielectric layer comprising opposing first and second surfaces;

a conductive plate disposed on the first surface;

at least one conductive ground via connected to the conductive plate and extending to the second surface;

at least one conductive signal via connected to the conductive plate and extending to the second surface;

the dielectric layer and the conductive plate defining apertures therein;

the ground via adapted for connection to the ground region; and

the signal via adapted for connection to the signal feed.

28. (CURRENTLY AMENDED) A method for forming an antenna comprising;
providing a first dielectric substrate comprising first and second opposingly disposed surfaces and a first conductive layer disposed on the first surface;

forming a conductive segment in the first conductive layer;

providing a second dielectric substrate comprising third and fourth opposingly disposed surfaces and a second conductive layer disposed on the third surface;

forming a plurality of conductive regions in the second conductive layer;

bonding the first conductive layer to the fourth surface;

forming at least one conductive ground via connected to a first one of the plurality of conductive regions and extending to the second surface;

forming at least one conductive signal via connected to a second one of the plurality of conductive regions and extending to the second surface; and

wherein the at least one ground via and the at least one signal via are further connected to the conductive segment.

29. (CURRENTLY AMENDED) The method of claim 28 wherein the first dielectric substrate further comprises a third conductive layer disposed on the second surface, and wherein the step of forming at least one ground via further comprises connecting the ground via to the third conductive ~~layer~~surface, and wherein the step of forming at least one signal via further comprises insulating the signal via from the third conductive ~~layer~~surface.